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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

FERRIS III, FRED O

ART UNIT	PAPER NUMBER
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2128

DATE MAILED: 08/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/589,758	Applicant(s) HAWS ET AL.	
	Examiner Fred Ferris	Art Unit 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) ✓
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 07/04/04 ✓
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. *Claims 1-18 have been presented for examination based on applicant's amendment filed on amendment filed on 4 June 2004. Applicants have cancelled claims 1-6. New claims 7-18 have been rejected by the examiner.*

Response to Arguments

2. *Applicant's arguments filed 4 June 2004 have been fully considered.*

Regarding applicant's response to objection to the drawings: Applicant's have submitted a corrected drawing of Figure 1 that includes a "Prior Art" legend. Accordingly, the examiner withdraws the objection to the drawings.

Regarding applicant's response to 112(1): Applicants argue that the specification provides sufficient enabling support for the claims and have submitted affidavits from a Professor Desmond Walton and Mr. David Borean in support of these arguments. The examiner finds these arguments non-persuasive for the following reasons. First, the statements made by Professor Walton are merely conclusory statements relating to the general technology and provide no indication of specifically how a skilled artisan, or in the case of Mr. Walton's statements, how a third year computer science student, would actually implement the claimed subject matter based on the information provided in the specification. Second, the statements made by Mr. Borean on page 3, line 1 of the declaration indicate that certain "steps" were described to him and that he was shown a series of "diagrams" relative to the invention, but he does not indicate where in the specification these steps or diagrams are recited or how they were used to implement

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the claimed subject matter. MPEP section 2100 requires the following of an enabling disclosure.

“For a computer-related invention, the disclosure must enable a skilled artisan to configure the computer to possess the requisite functionality, and, where applicable, interrelate the computer with other elements to yield the claimed invention, without the exercise of undue experimentation. The specification should disclose how to configure a computer to possess the requisite functionality or how to integrate the programmed computer with other elements of the invention, unless a skilled artisan would know how to do so without such disclosure. See, e.g., Dossel, 115 F.3d at 946-47, 42 USPQ2d at 1884-85; Northern Telecom v. Datapoint Corp., 908 F.2d 931, 941-43, 15 USPQ2d 1321, 1328-30 (Fed. Cir.1990)”

In this case, implementing the features of the claimed invention requires interfacing with the existing CAD programs (such as AutoCAD) software drivers and subroutines that control object placement, display of text (annotations), and object dimensioning. Both the specification, and the declarations by Professor Walton and Mr. Borean, are completely silent on the specifics of how the claimed invention would interact (i.e. interface) with an existing CAD program to, for example, “automatically” generate the adaptive dimensioning features as noted throughout the specification on pages 6-9. Accordingly, the examiner finds the statements by Professor Walton and Mr. Borean non-persuasive since they merely recite that the features of the claimed invention could be implemented, but do not specifically address how a skilled artisan would realized the claimed limitations from the information contained in the specification.

Since applicants have now cancelled claims 1-6 the previous 112(1) enablement rejection no longer applies. However, the examiner has now rejected new claims 7-18 under 112(1) for lack of an adequate written description. (Please see new 112(1) rejection below)

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Regarding applicant's response to 35 USC 102 & 103 rejections: Applicants have cancelled original claims 1-6, hence, the previous 102(b) and 103(a) prior art rejections no longer apply. The examiner has now rejected new claims 17-18 in view of new grounds for rejections. Hence, applicant's arguments relating to the prior art are now moot. However, the examiner notes that applicant's arguments relating to the advantages of the claimed invention being associated with features relating to cross-associating each object with its corresponding dimension annotation are clearly obvious in view of both the previous and newly cited prior art. MPEP section 2100 further recites:

*"As is the case for inventions in any field of technology, assessment of a claimed computer-related invention for compliance with 35 U.S.C. 102 and 103 begins with a comparison of the claimed subject matter to what is known in the prior art. If no differences are found between the claimed invention and the prior art, the claimed invention lacks novelty and is to be rejected by Office personnel under 35 U.S.C. 102. Once distinctions are identified between the claimed invention and the prior art, those distinctions must be assessed and resolved in light of the knowledge possessed by a person of ordinary skill in the art. Against this backdrop, one must determine whether the invention **would have been obvious at the time the invention was made**. If not, the claimed invention satisfies 35 U.S.C. 103. Factors and considerations dictated by law governing 35 U.S.C. 103 apply without modification to computer-related inventions. Moreover, **merely using a computer to automate a known process does not by itself impart nonobviousness to the invention**. See *Dann v. Johnston*, 425 U.S. 219, 227-30, 189 USPQ 257, 261 (1976); *In re Venner*, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958)."*

The examiner therefor asserts that, as noted above under claim interpretation, the claimed limitations relating to automatically generating adaptive dimensioning annotations, amount to mere automation of a manual (AutoCAD) process using well-known parametric modeling techniques, which is obvious in view of the prior art of record. (Also see new 102(a) and 103(a) rejections below)

Claim interpretation

3. Applicants are claiming a method of creating a CAD drawing consisting of target objects including the steps of; (a) inputting coordinate position data, (b) displaying target object corresponding to coordinate data, (c) creating the dimension annotation data relative to coordinate position data, (d) displaying dimension annotation correlated to dimension annotation data, (e) cross-associating the target object dimension annotation where a change in coordinate position data will effect (show) the change in dimension annotation data, and a change in the dimension annotation data will effect (show) a correlated change in coordinate position data, and (f/g) repeating steps for corresponding object. The examiner first notes that steps (a) to (d) of independent claims 7 and 13 merely claim limitations relating to features that would be found in nearly any commercially available CAD (AutoCAD, SolidWorks, SolidView/Pro, ProEngineer, etc.) program. (See: SolidView/Pro, Solid Concepts Inc., September 1999, page 1, for example) That is, these commercially available programs all provide for the input of coordinate position data, target object display relative to coordinate data, dimension annotation (on screen dimensioning text) data relative to coordinate position data, and the display correlated dimension data. Second, limitation (e) merely claims limitations relating to well-known parametric modeling techniques that are commonly practiced in the art. Namely, that drawing objects are represented as related sets of functions with variable parameters so that modifying one parameter, effects a change in the relative object and adjacent object coordinate position data. That is, the dimensions

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of drawing objects are cross-associated. The examiner has therefor interpreted the claimed cross-association of target object dimensions to be functionally equivalent to these well-known parametric modeling techniques. (See: "Single Dimension Relationships in Relational CAD", J. Hanna, Fifth Symposium of solid Modeling, ACM May 1999, page 314, page 314 sections 1-4, for example, or, "A Constraint-based Manipulator Toolset for Editing 3D Objects", C. Hsu, Solid Modeling 97', ACM July 1997, page 168-170, Figs. 1 & 4, for example)

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 7-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Specifically, claims 7-18 include limitations relating to creating dimension annotation data correlated to coordinate position data, cross-associating target objects and segments, and calculating coordinate position data that have not been sufficiently described in the specification. While the specification, for example, makes reference to "automatically" creating dimension annotations and extension lines (page 6, lines 4, 7,

26, page 7, lines 11, 15, 27), and “automatically” generating termination symbols by an adaptive dimensioning feature (page 6, line 17), the written description discloses no algorithms, flowcharts, or techniques for actually generating dimensions, cross-associating target objects, setting parameters, or calculating coordinates. Further, no written description is given how the “length of a target object is modified” or how the “moving of the target object is to a new position relative to other object is accomplished” (page 6, line 25). As another example, page 7, line 11 of the specification states that dimension annotations have “predetermined parameters” with the respective objects but gives no indication of exactly what the parameters are, how they are defined, or specifically how they relate to the respective objects. Accordingly, one skilled in the art would not know how to make and/or use the claimed invention from written description contained in the specification. In general, the specification appears as a “wish list” of features that are disclosed to be “automatically” generated, but contains no adequate written description of the processes or techniques used to implement the claimed subject matter. Figures 1-11 of the specification do not cure this deficiency since they merely depict the output of claimed subject matter and do not disclose the process by which the output is realized.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. Claims 7-18 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by ArchiTECH.PC v 3.0 joins the object revolution" H.E. Goldberg, CADALYST, Advanstar publications, May 2000.

Regarding independent claims 7, and 13: Goldberg discloses the ArchiTECH.PC V3.0 (released January 2000) architectural CAD program that provides automatic dimensioning of multiple drawing objects. The ArchiTECH.PC program provides cross-association (i.e. parametric dimensioning) of a target object's (object of interest) dimension annotation (displayed dimension text) where a change in coordinate data shows a change in the dimension annotation text, a system for automatically (dynamically) annotating CAD dimensions and dynamically generating (automatic) dimension annotations for the selected object based on modified (adjusted) positions.

The ArchiTECH.PC program disclosed by Goldberg teaches the elements of the claimed limitations of the present invention as follows:

- (a) inputting coordinate position data: Figs. 2, 4, 6, page 2 (all), page 3, (Dimensioning), page 4 (features).
- (b) displaying target object corresponding to coordinate data: Figs. 1 & 2, page 1, paragraph 1, page 2, paragraph 2, page 3, paragraph 1 (Library objects & Sectioning Tool), page 4 (all).
- (c) creating the dimension annotation data relative to coordinate position data: Figs. 1-6, page 1, paragraph 1, page 2, paragraph 2, page 3, paragraph 1 (Library objects & Sectioning Tool), page 4 (all).

- (d) displaying dimension annotation correlated to dimension annotation data: Figs. 1-6, page 1, paragraph 1, page 2 (all) , page 3, (Library objects, Dimensioning, Sectioning Tool), page 4 (all).
- (e) cross-associating the target object dimension annotation where a change in coordinate position data will effect (show) the change in dimension annotation data, and a change in the dimension annotation data will effect (show) a correlated change in coordinate position data: The ArchiTECH.PC provides automatic dimensioning of CAD objects and automatic updating (associate, i.e. parametric) of dimension annotations (text) relating to and objects relative corresponding dimensions. Figs. 1&2, page 1, paragraph 1, page 2, paragraph 2 Especially: page 2 (Dimensioning – 2nd paragraph), page 4 (all).
- (f/g) repeating steps (a) thru (e) for additional objects (prior to input): This feature would obviously be inherent in the prior art since the any CAD system would need to repeat the processing of steps (a) to (g) in order to accommodate additional objects. Otherwise, the system could not operate on multiple drawing objects.

Regarding dependent claims 8-12 and 14-18: This group of claims merely includes additional limitations relating to processing additional (further) target objects and modifying (updating) relative dimensions using equivalent steps to those recited in the independent claims, and detecting if a target object intersects with further adjacent target objects. ArchiTECH.PC provides automatic dimensioning (and modifying) of dimensions between multiple (further) objects and detects (inherent) adjacent (further)

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object intersection and superposition of objects. (see: page 2, Dimensioning and Sectioning tool). These claims are rejected using the same reasoning as previously recited above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 7-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over “AutoCAD User’s Guide”, Release 14, Autodesk, Inc., December 5, 1997 (of record) in view of “Automatic Dimensioning in Design for Manufacturing”, D. Serrano, ACM 089791-427-9/91/0006/0379, ACM 1991.

Independent claims 7 and 13 are drawn to:

Method of creating a CAD drawing consisting of target objects including the steps of:

- (a) inputting coordinate position data*
- (b) displaying target object corresponding to coordinate data*

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- (c) creating the dimension annotation data relative to coordinate position data*
- (d) displaying dimension annotation correlated to dimension annotation data*
- (e) cross-associating the target object dimension annotation where a change in coordinate position data will effect (show) the change in dimension annotation data, and a change in the dimension annotation data will effect (show) a correlated change in coordinate position data.*
- (f/g) repeating steps (a) thru (e) for additional objects (prior to input)*

Regarding independent claims 7 and 13: AutoCAD 14 discloses a CAD drawing system incorporating annotation of dimensions, text, lines, extension lines, termination lines, and related input parameters. AutoCAD further provides facilities for creating and displaying a target object and generating dimension annotations for a target object. (See: Chapters 6, 7, 9, and 10). The AutoCAD 14 User's Guide discloses the elements of the claimed limitations of the present invention as follows:

- (a) inputting coordinate position data: (pp. 331-334, 397-401, 413-415, 405-409, 738, 364-381)
- (b) displaying target object corresponding to coordinate data: (pp. 162-172, 242, 272)
- (c) creating the dimension annotation data relative to coordinate position data: (pp. 401-414, 364, 366)
- (d) displaying dimension annotation correlated to dimension annotation data: (pp. 162-172, 242, 272)

AutoCAD does not explicitly teach cross-associating object dimension annotations. (Although, as noted above, all of the features required to facilitate automatic modification of an objects length/position based on a modified dimension annotation (or visa versa) are included in AutoCAD 14)

Serrano discloses automatic dimensioning in CAD systems, techniques for parametric dimensioning, and the related geometry for computing distances of objects of in CAD drawings based on the association between objects as effected by a change in coordinates. (i.e. cross-associated)

Serrano teaches the elements of the claimed limitations of the present invention as follows:

- (e) cross-associating the target object dimension annotation where a change in coordinate position data will effect (show) the change in dimension annotation data, and a change in the dimension annotation data will effect (show) a correlated change in coordinate position data: (Abstract, Sections: 1.0, 2.3, 3.0-3.2, Figs. 9-12)*
- (f/g) repeating steps (a) thru (e) for additional objects (prior to input): This step would be obvious (and necessary) otherwise the system would not be capable of processing additional (multiple) objects.*

It would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to modify the teachings of AutoCAD 14 relating to a CAD drawing system incorporating annotation of dimensions relating to text, lines and objects, with the teachings of Serrano relating to automatic (parametric) dimensioning of CAD objects, to realize the claimed invention. An obvious motivation exists since, as referenced in the prior art, there is a need for a CAD system which provides the capability to more efficiently and conveniently dimension geometric objects (Jackson: CL1-L65, or Serrano – 1.0 Introduction). Therefore, a skilled artisan would have made an effort to become aware of what capabilities had already been developed in the market place and, hence, would have been motivated to modify the teachings of

AutoCAD 14 with the teachings of Serrano in order to reduce development time and cost.

Regarding dependent claims 8-12 and 14-18: This group of claims merely includes additional limitations relating to processing additional (further) target objects and modifying (updating) relative dimensions using equivalent steps to those recited in the independent claims, and detecting if a target object intersects with further adjacent target objects. As cited above, AutoCAD 14 teaches the elements processing multiple target objects in a CAD drawing system as cited above (steps (a) to (d)). Serrano teaches automatic dimensioning (and modifying) of dimensions between multiple (further) objects and detecting adjacent object intersection and superposition of objects (Abstract, Sections: 1.0, 2.3, 3.0-3.2, Figs. 9-12). Accordingly, these claims are obvious in view of the prior art using the same reasoning as previously recited above.

While the specification for the claimed invention is delinquent in the areas cited under 112(1) rejections, the examiner has made prior art rejections based on the limited scope of information contained within the specification and the language of the claims.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 5,390,294 issued to Takeuchi teaches automatic CAD dimensioning.

U.S. Patent 5,729,750 issued to Ishida teaches automatic CAD dimensioning.

U.S. Patent 6,014,503 issued to Nagata teaches automatic CAD dimensioning.

U.S. Patent 6,771,260 issued to Hsama el al teaches automatic CAD dimensioning.

U.S. Patent 6,445,388 issued to Subrahmanyam et al teaches parametric dimensioning.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 703-305-9670 and whose normal working hours are 8:30am to 5:00pm Monday to Friday.

Any inquiry of a general nature relating to the status of this application should be directed to the group receptionist whose telephone number is 703-305-3900.

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